

## Claims

1. A threaded joint for pipes having a metal-to-metal seal portion and comprising a male thread and an unthreaded sealing surface formed on an end of a steel pipe, and a female thread and an unthreaded sealing surface formed on the inner surface of a coupling, the female thread threadingly engaging with the male thread and the unthreaded sealing surface of the coupling abutting against the sealing surface of the steel pipe and forming an annular contact portion,

characterized in that the surface roughness  $R_y$  of the unthreaded sealing surfaces of the steel pipe and the coupling is at most  $25\mu\text{m}$ ,

and upon make-up of the threaded joint, a metal-to-metal seal portion can be formed in which the average pressure  $P_m$  of the annular contact portion satisfies  $P_m/P_y \geq 3$ , and the width in the axial direction of the portion which receives a pressure  $P_s$  which satisfies  $P_s/P_y \geq 1$  in the annular contact portion is at least 1 mm, with the yield pressure of the inner surface of the pipe being  $P_y$ .

2. A threaded joint for pipes having a metal-to-metal seal portion and comprising a male thread and an unthreaded sealing surface formed on an end of a steel pipe, and a female thread and an unthreaded sealing surface formed on the inner surface of a coupling, the female thread threadingly engaging with the male thread and the unthreaded sealing surface of the coupling abutting against the sealing surface of the steel pipe and forming an annular contact portion,

characterized in that upon make-up of the threaded joint, for the unthreaded sealing surfaces of both the steel pipe and the coupling, the relationship between the average pressure  $P_m$  of the annular contact portion and the surface roughness  $R_y$  ( $\mu\text{m}$ ) satisfies  $P_m/P_y \geq 0.0032 \times R_y^2 + 1.0$ , and the width in the axial direction of the portion which receives a pressure  $P_s$  which satisfies  $P_s/P_y \geq 1$  in the annular contact portion is at least 1 mm, with the yield pressure of the inner surface of the pipe being  $P_y$ .

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3. A threaded joint for pipes having a metal-to-metal seal portion and comprising a male thread and an unthreaded sealing surface formed on an end of a steel pipe, and a female thread and an unthreaded sealing surface formed on the inner

surface of a coupling, the female thread threadingly engaging with the male thread and the unthreaded sealing surface of the coupling abutting against the sealing surface of the steel pipe and forming an annular contact portion,

characterized in that the surface roughness  $R_y$  of the unthreaded sealing  
5 surfaces of the steel pipe and the coupling is at most  $30\text{ }\mu\text{m}$ ,

and upon make-up of the threaded joint, the average pressure  $P_m$  of the annular contact portion satisfies  $P_m/P_y \geq 3$ , and the width in the axial direction of the portion which receives a pressure  $P_s$  which satisfies  $P_s/P_y \geq 1$  in the annular contact portion is at least 2 mm, with the yield pressure of the inner surface of the pipe being  $P_y$ .

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4. A threaded joint for pipes as described in claim 1 wherein the end surface of the steel pipe has a shoulder portion, and correspondingly the coupling also has a shoulder portion capable of abutting against the end shoulder portion of the steel pipe.

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5. A threaded joint for pipes as described in claim 2 wherein the end surface of the steel pipe has a shoulder portion, and correspondingly the coupling also has a shoulder portion capable of abutting against the end shoulder portion of the steel pipe.

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6. A threaded joint for pipes as described in claim 3 wherein the end surface of the steel pipe has a shoulder portion, and correspondingly the coupling also has a shoulder portion capable of abutting against the end shoulder portion of the steel pipe.